



Lake Ripley Aquatic Plant Field Guide



August 2021

LAKE RIPLEY PLANT DESCRIPTIONS

Aquatic plants, also called macrophytes, include all macroscopic plants (observable with the naked eye) found in aquatic environments. They are represented by a diverse group of aquatic and wetland plants, including flowering vascular plants, mosses, ferns and macroalgae. Aquatic vegetation is naturally present to some extent in all lakes and represents an important component of a healthy ecosystem. There are four basic plant types: emergent, free-floating, floating-leaf and submersed.

Emergents (e.g. cattail and bulrush) are rooted in water-saturated or submerged soils but have stems that grow above the water surface. These plants most often grow in shallow-water areas along lakeshore margins and within riparian wetlands. Free-floating plants (e.g. duckweed) are not rooted in the lake bottom, but have extensive root systems that hang beneath floating leaves. They obtain most of their required nutrients from the surrounding water column. These plants are often quite small, and may completely cover the water surface in small, fertile water bodies. Floating-leaf macrophytes (e.g. water lilies) have leaves that float on the lake surface with a long rooted stem anchored to the lake bottom. Because the leaves of these plants are delicate and easily torn by wave action, they are typically found only in quiet, sheltered bays. Submersed plants (e.g. milfoil, water celery and Illinois pondweed) grow entirely under the water surface in areas where there is sufficient sunlight penetration. They may or may not be rooted to the lake bottom.

Aquatic plants can also be described in terms of their regional nativity. Native species are those that were historically found in a particular geographic region. On the other hand, non-native or “exotic” species evolved outside the region of interest and are frequently referred to as weeds. These transplanted species are no longer controlled by their native predators, and can sometimes take over an entire water body, forming large monotypic colonies. This prolific and uncontrolled growth can threaten biodiversity, water quality and the recreational value of the invaded water body. Expected challenges include increased storm events, increased days of high temperatures, and wave action from changes in recreational vessels.

The following aquatic plants were identified in Lake Ripley during prior inventories. Descriptions and illustrations of each species are provided below.

Common Name: **Coontail, hornwort**

Scientific Name: *Ceratophyllum demersum*

Plant Type: Submersed

Duration: Perennial

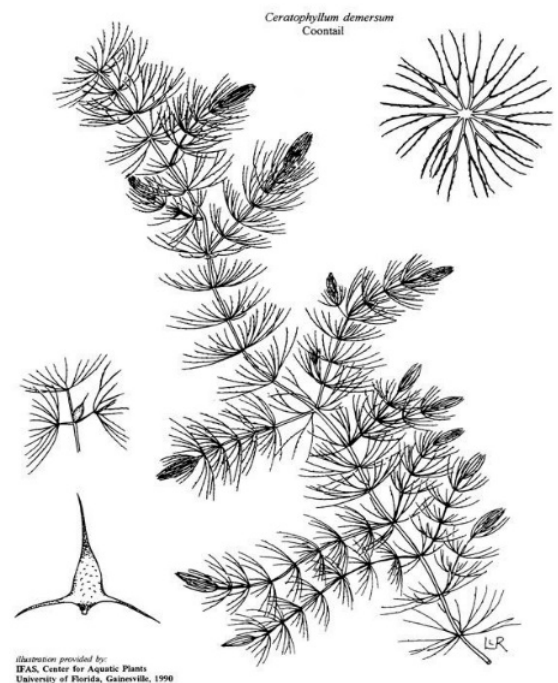
U.S. Nativity: Native

Coontail typically grows in clear water up to 15 feet deep. It is found over a broad range of water chemistries, prefers soft substrates, and is tolerant of turbid waters. New plants are formed primarily by stem fragmentation because seeds rarely develop. This plant has long trailing stems that lack true roots but may be loosely anchored to the sediment by pale modified leaves. Because it is not rooted, it can drift between depth zones. Coontail can tolerate cool temperatures and low light conditions. These qualities allow it to overwinter as an evergreen plant, continuing photosynthesis at a reduced rate under the ice.

Although coontail has the capacity to grow at nuisance levels, it should not be eliminated from a water body as it offers good habitat for fish and invertebrates. This plant is often found on drop-offs, producing tree-like cover for bluegills, perch, largemouth bass and northern pike. Bushy stems of coontail harbor many invertebrates and provide important shelter and foraging opportunities for fish. Both foliage and fruit of coontail are grazed by a variety of waterfowl. Coontail is also effective at removing phosphorus from the water column.



Figure 1: Photo courtesy of www.wildflower.org



Common Name: **Muskgrass**

Scientific Name: *Chara contraria*

Plant Type: Submersed (Macro-alga)

Duration: Perennial

U.S. Nativity: Native

Muskgrass is actually an unusual type of algae but has a growth form that resembles a higher plant. This plant is simple in structure and has rhizoids rather than true roots. It ranges in size from ankle-high to knee high and grows entirely below the water surface. The main branches of muskgrass have ridges that are often encrusted by calcium carbonate, giving the plant a harsh, crusty feel. Muskgrass is usually found in hard waters and prefers muddy or sandy substrate. It can often be found in deeper water than other plants, and its dense growth is capable of covering an entire lake bottom.

Muskgrass has several ecological benefits. It is a favorite food for waterfowl. It also supports algae and invertebrates that provide additional grazing. Beds of muskgrass are considered valuable fish habitat, offering cover and food for young largemouth and smallmouth bass. As far as enhancing water quality, the rhizoids of muskgrass slow the movement and suspension of sediments. It is a good bottom stabilizer and is often the first plant to colonize open areas. It also softens water by removing lime and carbon dioxide. This plant is best left alone since it grows close to the bottom and generally doesn't interfere with water uses.



Chara spp. Muskgrass

Chara spp.
Muskgrass

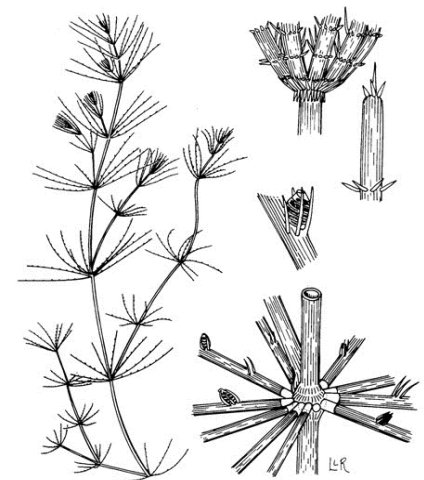


Illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990

Figure 2: Photo courtesy of www.aquaplant.tamu.edu

Common Name: **Needle spikerush**
Scientific Name: *Eleocharis acicularis*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Native

Needle spikerush can be found from moist shorelines to water as deep as 6.5 feet deep. It is found more often on firm substrates and can tolerate some turbidity. It is found over a broad and circumneutral pH range, but only has limited conductivity and alkalinity ranges. Looking like thin grass, which creeps along with a delicate underground rhizome. Needle spikerush produces stems that are slender and rather short, reaching 12 cm at their longest. They emerge in tufts from fine, spreading rhizomes. Leaves are reduced to sheaths at the base of the stem. Each stem is topped with a solitary, oval spikelet that has a tight spiral of tiny flowers that eventually matures into nutlets.

Needle spikerush provides food for a wide variety of waterfowl as well as muskrats. Submersed beds offer spawning habitat and shelter for invertebrates.

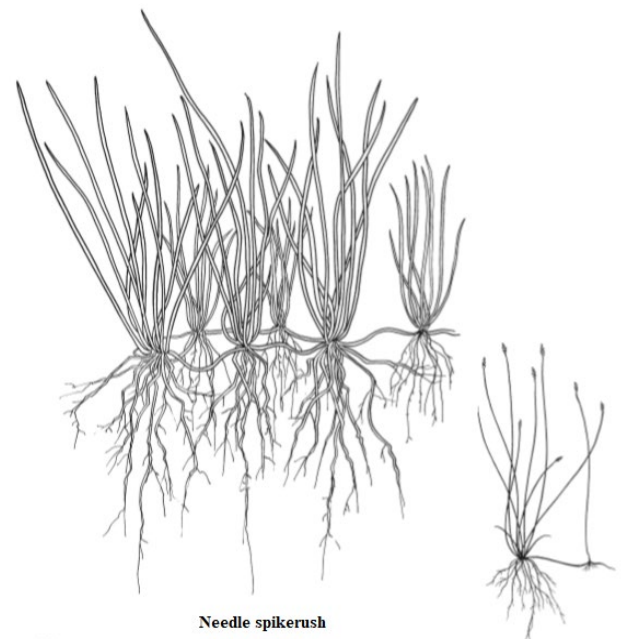


Figure 3: Photo courtesy of www.minnesotawildflowers.info

Common Name: **Common waterweed**

Scientific Name: *Elodea canadensis*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

Common waterweed prefers soft, silty substrate, and is tolerant of turbid, low-light water conditions. This plant grows in a range of water depths, but prefers cool, nutrient-rich waters. It has a broad but generally alkaline pH distribution and moderate conductivity and alkalinity distributions. Common waterweed lives entirely underwater with the exception of small white flowers that bloom at the surface and are attached to the plant by delicate stalks. In the fall, leafy stalks will detach from the parent plant, float away, root, and start new plants. This is its most important method of spreading, with seed production playing a relatively minor role.

This plant generally over-winters as an evergreen, allowing photosynthesis to continue at a reduced rate under the ice. The branching stems of this plant provide excellent habitat for fish and invertebrates, but dense stands can obstruct fish movement and become a nuisance. The plant provides food for muskrats and waterfowl.



Figure 4: Photo courtesy of www.wikipedia.com

Common Name: **Water stargrass**

Scientific Name: *Heteranthera dubia*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

Water stargrass grows in a variety of water depths, ranging from very shallow to 10 feet deep. It can succeed in a range of sediment types and will tolerate reduced water clarity. It grows over a moderate and somewhat alkaline pH range, and moderate conductivity. This species has slender, freely branched stems that emerge from a rhizome. It produces yellow star-shaped flowers.

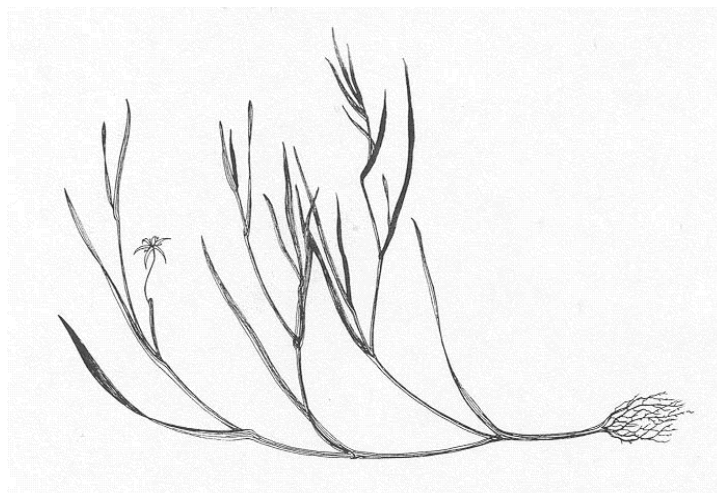
This plant can be a locally important source of food for geese and ducks. It also offers good cover and foraging opportunities for fish.



Figure 5: Photo courtesy of www.aquaplant.tamu.edu



Figure 6: Photo courtesy of www.aquaplant.tamu.edu



Common Name: **Small duckweed**

Scientific Name: ***Lemna minor***

Plant Type: Free-floating

Duration: Perennial

U.S. Nativity: Native

These tiny, free-floating plants grow in bays and quiet areas protected from wind and wave action. Small duckweed drifts with the wind or current and is not dependent on depth, sediment type or water clarity. It is found over a moderate pH range and broad ranges of alkalinity and conductivity. Duckweed is often associated with eutrophic conditions, and can become a nuisance in stagnant, fertile water bodies. It has the ability to rapidly reproduce in nutrient-rich water, doubling in population within three to five days. Since the plant is free-floating, it must obtain all of its nutrition from the water by absorbing nutrients through dangling roots and leaf undersurface. In fact, it is capable of removing large amounts of nutrients from the water in this way.

Rafts of small duckweed provide shade and cover for fish and invertebrates, but may shade out larger, submersed plants. Small duckweed does not provide ideal fish habitat due to excessive shading and poor food value. The plant is a food source for waterfowl and marsh birds (providing up to 90% of the dietary needs for a variety of ducks and geese), and does support insects that are valuable as food for fish. It is also consumed by muskrats, beaver and fish. Conventional physical removal and chemical control are usually ineffective. Limiting growth of duckweed is best accomplished through nutrient-reduction strategies.



Figure 7: Photo courtesy of www.aquaplant.tamu.edu

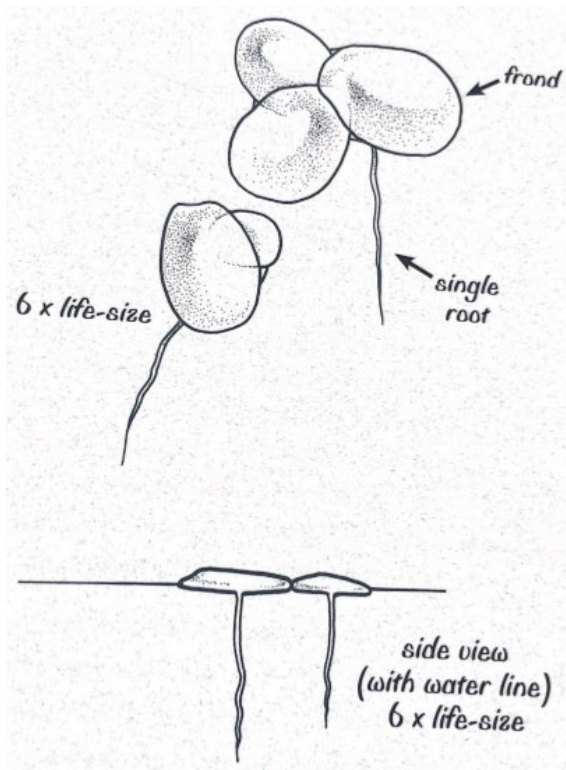


Figure 8: Photo courtesy of www.aquaplant.tamu.edu

Common Name: **Forked duckweed**

Scientific Name: ***Lemna trisulca***

Plant Type: Free-floating

Duration: Perennial

U.S. Nativity: Native

Forked duckweed differs from other duckweed species by the stalk-like, “rowboat and oars” shape of the fronds and olive-green color. This species is often found just beneath the surface of quiet water. It drifts with the wind or current and is not dependent on depth, sediment type or water clarity. However, there must be sufficient nutrient content in the water to sustain growth. Like other temperate-climate duckweeds, this species overwinters by producing winter buds that rest on the sediment. In spring, the buds become buoyant and float to the surface where plant growth continues through the summer. Forked duckweed is a good food source for waterfowl and provides cover for fish and invertebrates.

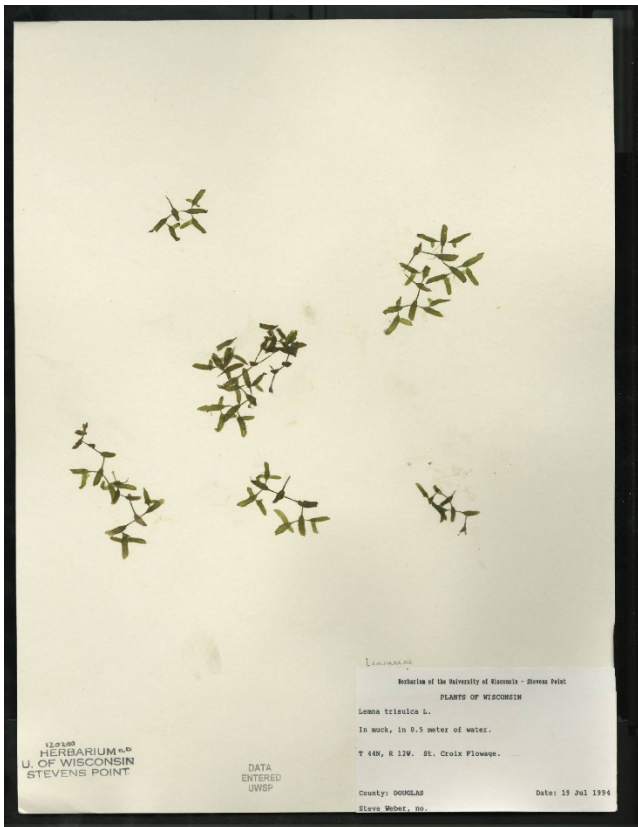


Figure 9: Photo courtesy of www.wisflora.herbarium.wisc.edu



Figure 10: Photo courtesy of www.wisflora.herbarium.wisc.edu

Common Name: **Northern watermilfoil**
Scientific Name: *Myriophyllum sibiricum*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Native

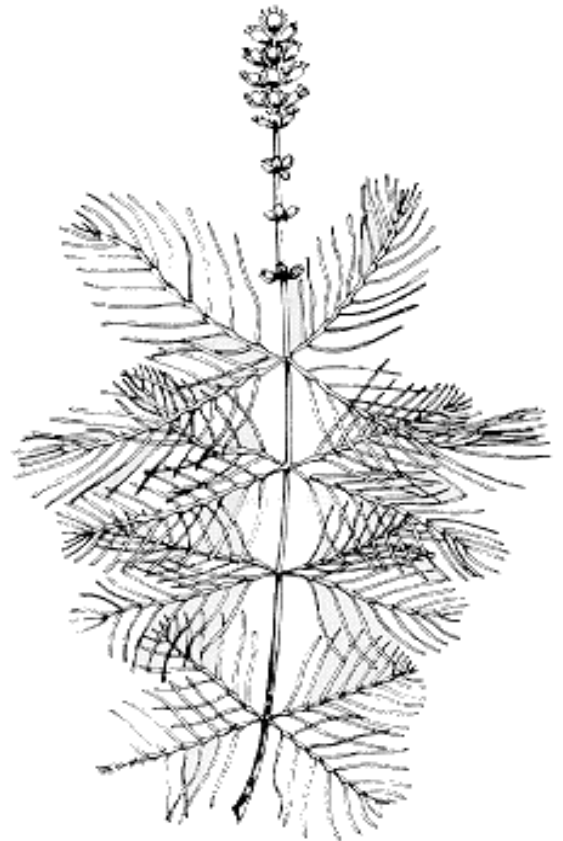
This species is easily confused with the non-native Eurasian watermilfoil (*Myriophyllum spicatum*). The plant can grow in water more than 13 feet deep, prefers soft sediment, and is sensitive to turbidity. It grows over a broad alkalinity range and moderate conductivity and pH ranges. Since it is sensitive to reduced water clarity, this plant has been shown to decline in lakes that become increasingly eutrophic. Stems emerge in spring and can produce flower spikes by early to midsummer that stick out of the water.

Leaves and fruit of northern watermilfoil are consumed by a variety of waterfowl. The feathery foliage traps detritus and provides invertebrate habitat. Beds of northern watermilfoil offer shade, shelter and foraging opportunities for fish.



2017 © Peter M. Dziuk

Figure 11: Photo courtesy of www.minnesotawildflowers.info



Common Name: Eurasian watermilfoil
Scientific Name: *Myriophyllum spicatum*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Non-native

This plant is not native to the U.S. and is considered a nuisance plant in many lakes. It can grow in water depths of over 13 feet deep, and is found over broad alkalinity, moderate conductivity, and moderate but high pH ranges. The average fruiting date is middle to late summer; however, it can flower and fruit twice, once in early summer and once in late summer. The late flowering can be prolonged and fruiting plants can be found into early November. Flower stalks do not develop until the stems reach the surface.

In the spring, shoots begin to grow rapidly in response to rising water temperatures (starting at about 59°F). As shoots grow, lower leaves drop off in response to shading. When the plant reaches the surface, shoots branch profusely to form a dense, floating canopy above leafless vertical stems. Plants then reproduce by flowering at the surface and through fragmentation. Both broken stems and plant fragments are able to regenerate into new plants.

Dominance by this species is often established early in the growing season, due to a combination of high over-wintering biomass and rapid spring growth. Conditions of low light and high-water temperature, characteristics of many eutrophic environments, stimulate shoot elongation and canopy formation.

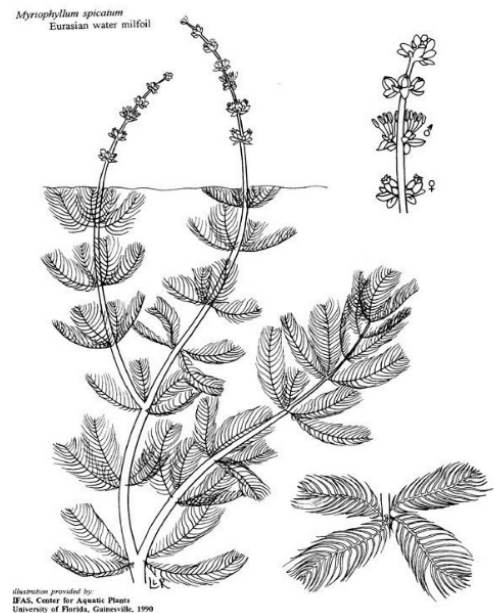
Eurasian watermilfoil is an invasive, pioneer species that quickly colonizes disturbed areas of the lake bottom. Disturbances may be in the form of sediment deposition, plant removal, water level fluctuations, or bottom scouring caused by motorboats. Once introduced to a waterbody, EWM can quickly out-compete and displace other species. As for ecological value, this species provides limited cover for fish when poor water clarity prevents broad-leaved pondweeds and other species from growing. Waterfowl graze on fruit and foliage to a limited extent. EWM beds also provide invertebrate habitat, but studies have shown mixed stands of pondweeds and wild celery have higher invertebrate numbers and diversity.



Figure 12: Photo courtesy of www.nwcb.wa.gov



Figure 13: Photo courtesy of www.keptahoeblue.org



Common Name: **Slender naiad, slender naiad**

Scientific Name: *Najas flexilis*

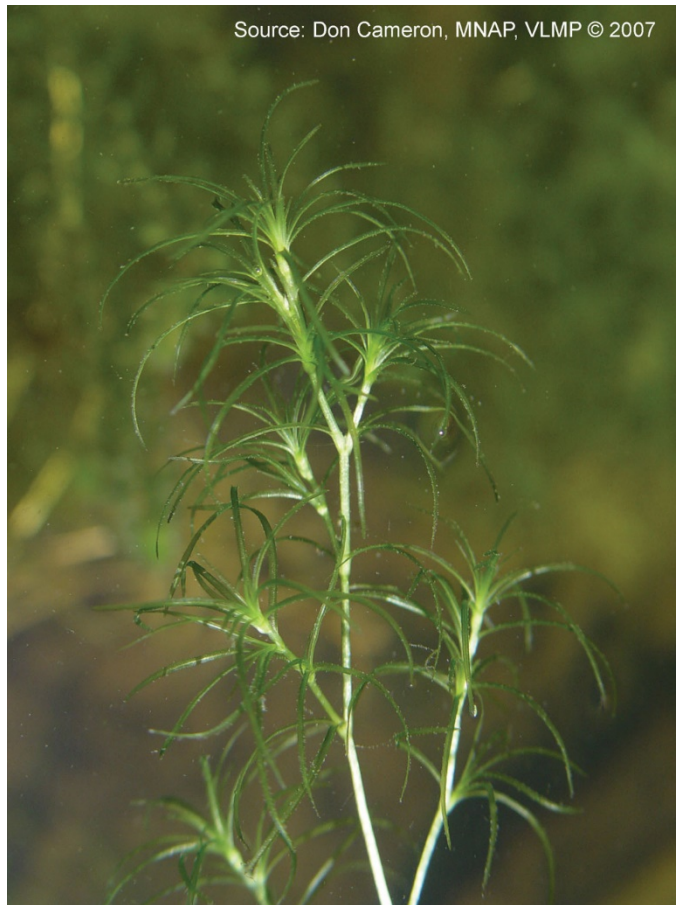
Plant Type: Submersed

Duration: Annual

U.S. Nativity: Native

This plant grows at a wide range of depths, prefers hard substrates like sand and gravel, and is not sensitive to turbidity. It is an annual plant that often acts as a pioneer species by invading open or disturbed areas. It can tolerate broad alkalinity and conductivity ranges and a moderate pH range. Slender naiad is firmly rooted and has slender, bright green leaves that are crowded near the tip. Fruits or seeds appear as tiny swellings at the base of the leaves. It usually grows in clumps or beds among other species.

Slender naiad is an important plant for waterfowl, marsh birds and muskrats. Stems, leaves and seeds are all consumed by a wide variety of ducks. It is also a good producer of food and shelter for fish. Slender naiad is often best left alone since it's a low-growing plant that usually does not overpopulate an area.



Slender naiad

Figure 14: Photo courtesy of www.mainevlmp.org

Common Name: **Spiny naiad**

Scientific Name: *Najas marina*

Plant Type: Submersed

Duration: Annual

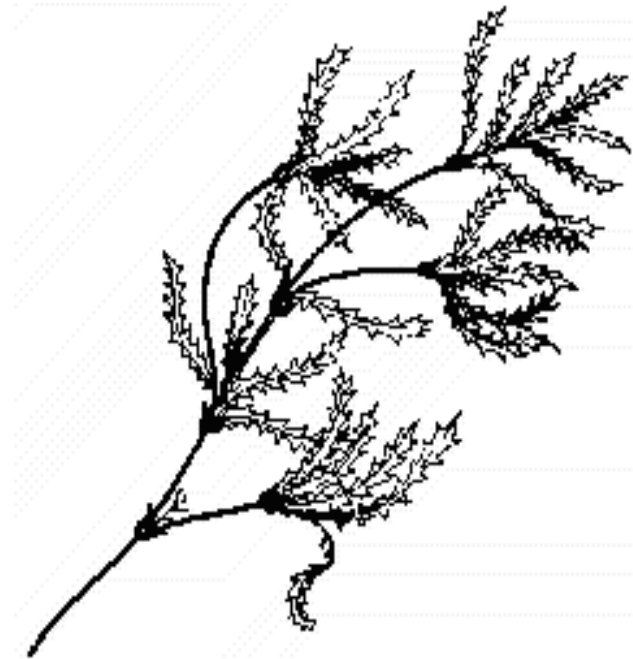
U.S. Nativity: Introduced, naturalized

This annual, naturalized plant is found in high alkalinity, high conductivity, and high pH waters. It prefers soft substrate and can grow up to about 10 feet deep. Spiny naiad is tolerant of higher than normal chloride concentrations, and often grows where concentrations exceed 10 mg/L. This species has prickly stems that are often branched. The leaves are coarsely toothed and have conspicuous spines along the underside of the midvein. It exhibits considerable morphological variability over its range, and subspecies may be warranted. Although spiny naiad is considered introduced to Wisconsin, it does not display any invasive behavior nor cause nuisance conditions in most growing situations.

Spiny naiad provides food and shelter for fish, and is a food source for waterfowl. Its leaves and seeds are consumed by a wide variety of ducks.



Figure 15: Photo courtesy of www.adk.org



Common Name: **Bullhead pond lily, spatterdock**

Scientific Name: *Nuphar variegata*

Plant Type: Floating-leaf

Duration: Perennial

U.S. Nativity: Native

This species is usually found in ponds or slow-moving streams. It can grow in sun or shade and shows a preference for soft sediment and water depths less than 6.5 feet. Flowering occurs throughout the summer, with the flowers rising above the floating leaves. Later in the summer, the sepals drop, and the central flower structure develops into a fleshy, well-rounded fruit. This plant provides seeds for waterfowl. The leaves, stems and flowers are grazed by deer. Muskrat and beaver are known to eat the rhizomes. The floating leaves offer shade and shelter for fish as well as habitat for invertebrates.



Figure 17: Photo courtesy of www.asapaquatics.com

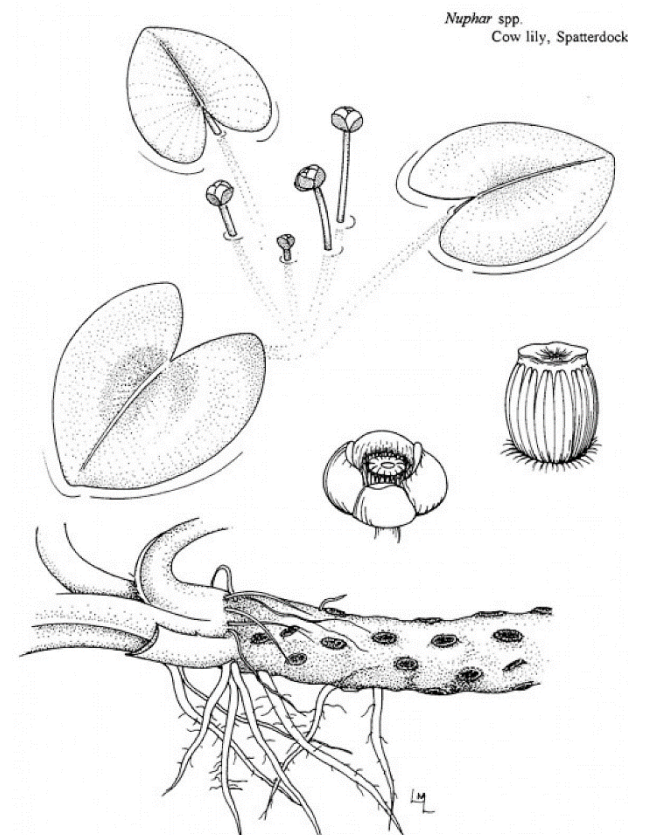


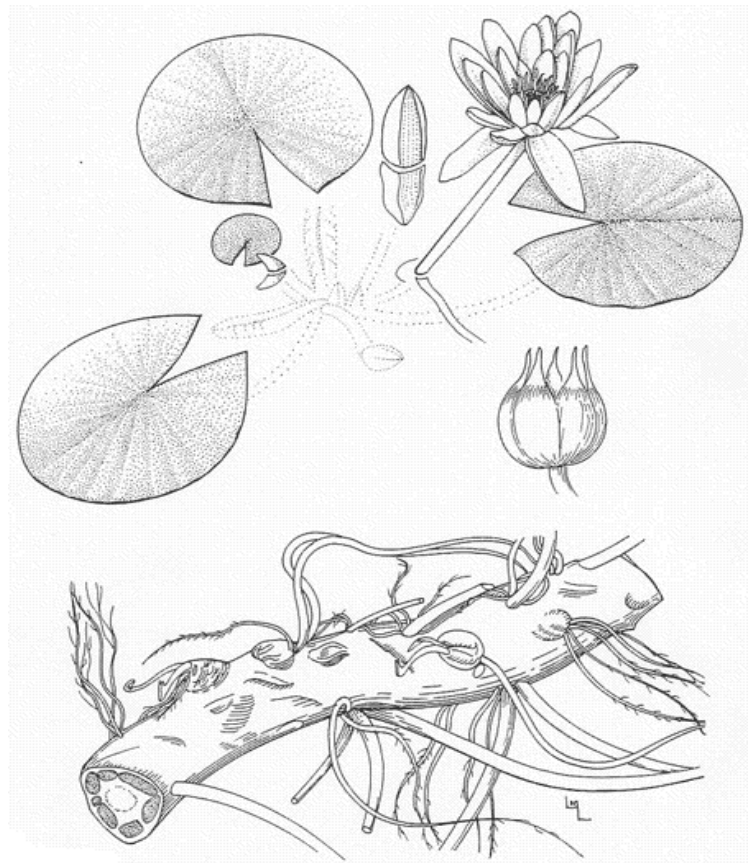
Figure 16: Photo courtesy of www.plants.ifas.ufl.edu

Common Name: **White water lily**
Scientific Name: *Nymphaea odorata*
Plant Type: Floating-leaf
Duration: Perennial
U.S. Nativity: Native

This species is found over moderate alkalinity and conductivity ranges and a wide pH range. It grows at a median depth of about 3-3.5 feet and shows no substrate or turbidity preference. Leaves and stems are round, with most of the leaves floating on the water's surface. White water lily is usually found in quiet water of lakes or ponds. Waterfowl eat the seeds of this plant, while deer, muskrat, beaver, and moose eat the rhizomes. The leaves offer shade and shelter for fish.



Figure 18: Photo courtesy of www.aquaplant.tamu.edu



Common Name: **Curly-leaf pondweed**

Scientific Name: *Potamogeton crispus*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Non-native

This plant is not native to the U.S. and has a tendency to become a nuisance in many lakes. It is usually one of the first plants visible in the spring, and may cause temporary problems due to its early, rapid growth. It has wavy, finely serrated leaves that help distinguish it from other pondweeds. The plant can grow under the ice while most plants are dormant but declines by early to mid-July when other species are reaching peak growth. In the spring, curly-leaf pondweeds produce flower spikes that stick up above the water surface. It typically grows in soft sediments and shallower water depths up to 12 feet. It can tolerate cool temperatures and low light and will grow in turbid water. It is found over a broad conductivity range, and moderate pH and alkalinity ranges.

Young curly-leaf plants emerge from the sediments during fall, remain dormant during winter, and grow rapidly after ice-out, forming dense surface mats over expansive meadows. This growth cycle allows curly-leaf pondweed to out-compete other species for nutrients, sediment area and light. Curly-leaf pondweed provides food and shelter for some fish and invertebrates, especially in the winter and spring when most other aquatic plants are reduced to rhizomes and winter buds. However, the midsummer die-off creates a sudden loss of habitat and releases nutrients into the water column that can trigger algal blooms and create turbid water conditions.



Figure 19: Photo courtesy of www.aquaticbiologists.com



Common Name: **Leafy pondweed**
Scientific Name: *Potamogeton foliosus*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Native

Leafy pondweed can grow in a wide variety of habitats and water quality conditions. It is most often found in shallow water and shows a preference for soft sediments. This plant is tolerant to eutrophic water conditions. It overwinters by rhizomes and winter buds. The early-season fruit of leafy pondweed can be a locally important food source for geese and a variety of ducks. It may also be grazed by muskrat, deer, beaver, and moose. The bushy form of this pondweed offers good surface area for invertebrates and cover for juvenile fish.

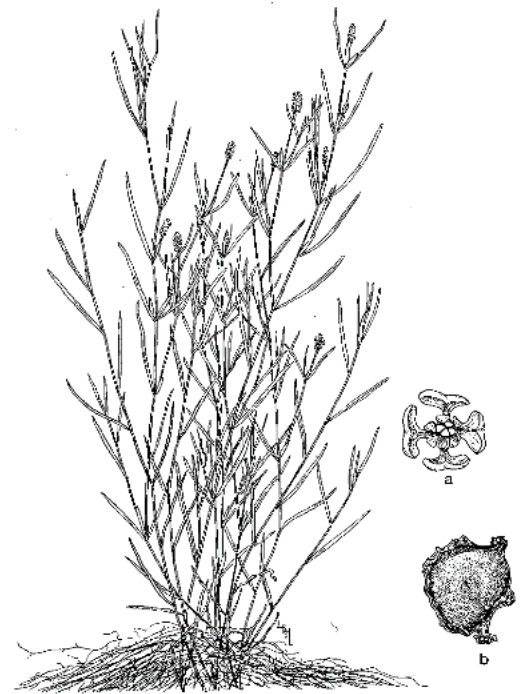


Fig. 6. Leafy pondweed (*Potamogeton foliosus*). Plant with threadlike stems and leaves; also the tiny flowers in very small flowering spikes. a. Flower showing four petal-like parts. b. Nutlet with scalloped seed and erect beak.

Common Name: **Fries' pondweed**
Scientific Name: *Potamogeton friesii*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Native

Closely related to and often confused with small pondweed, this plant will tolerate turbid conditions. It is found in both shallow and moderately deep water. This plant overwinters by rhizomes and winter buds. Seeds and vegetation provide food and cover for a variety of aquatic life, including fish, ducks, geese, muskrats, and beavers.



Figure 20: Photo courtesy of Brenton Butterfield

Common Name: **Variable-leaf pondweed**

Scientific Name: *Potamogeton gramineus*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

This plant is an extremely variable species that has a number of varieties that may be the result of habitat differences. It also hybridizes with most broad-leaved pondweeds. It is found over broad alkalinity and pH ranges, and a limited conductivity range. Variable pondweed grows at a median depth of about 3.5 feet, prefers firm substrate, but shows no turbidity preference. It is often found growing in association with muskgrass (*Chara spp.*), slender naiad (*Najas flexilis*) and wild celery (*Vallisneria americana*).

The fruits and tubers of variable pondweed are grazed by a variety of waterfowl, including geese and wood duck. Muskrat, beaver, deer and moose may also eat the foliage and fruit. This plant provides cover for panfish, largemouth bass, muskellunge, and northern pike, as well as nesting grounds for bluegill. An extensive network of leafy branches offers invertebrate habitat and foraging opportunities for fish.



Figure 21: Photo courtesy of Brenton Butterfield

Common Name: **Illinois pondweed**

Scientific Name: *Potamogeton illinoensis*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

This plant is found over a broad alkalinity range, a moderate and high pH range, and a moderate conductivity range. It flowers and fruits in midsummer and shows no substrate preference. Illinois pondweed is not turbidity tolerant and is probably becoming increasingly rare where water clarity has decreased. It is commonly found in water less than 6.5 feet deep, but its maximum depth distribution is greater than 10 feet.

The fruit produced by Illinois pondweed can be a locally important food source for a variety of ducks and geese. Muskrat, deer, beaver and moose are known to consume this plant. This pondweed offers excellent shade and cover for fish such as panfish, largemouth bass, muskellunge and northern pike, and provides nesting grounds for bluegills. The large leaves offer good surface area for invertebrates.



Figure 22: Photo courtesy of Brenton Butterfield

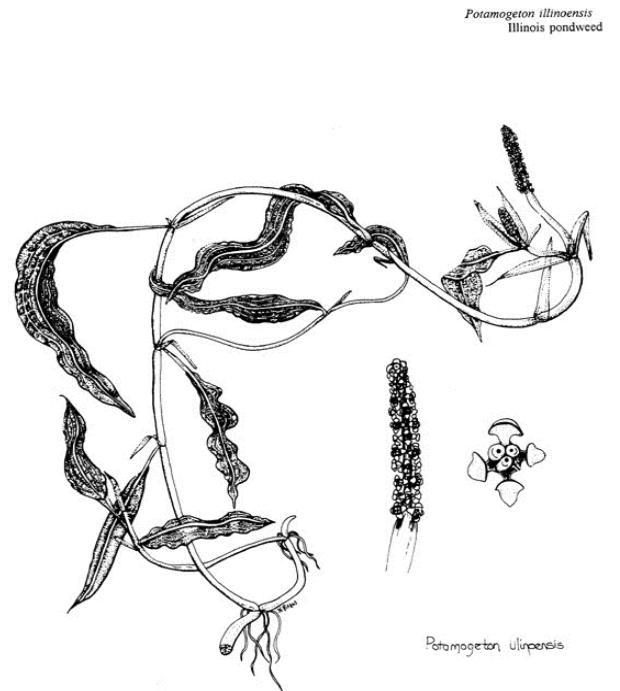


Illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1993

Common Name: **Floating-leaf pondweed**

Scientific Name: *Potamogeton natans*

Plant Type: Submersed & floating-leaf

Duration: Perennial

U.S. Nativity: Native

This plant shows no substrate preference and is most commonly found in water less than 5 feet deep. It can grow in highly turbid water but shows no turbidity preference. It is found over a broad range of water chemistries. Floating-leaf pondweed has firmly rooted thick stems and can have both submersed and floating leaves. Submersed leaves are typically thin and slender, while floating leaves are oval shaped. Flower or seeds may extend above the water surface.

The fruit of floating-leaf pondweed is held on the stalk until late in the growing season. This provides valuable grazing opportunities for ducks and geese. Muskrat, beaver, deer, and moose may also consume portions of the plant. Floating-leaf pondweed is considered good fish habitat as it provides shade, cover, and foraging opportunities.

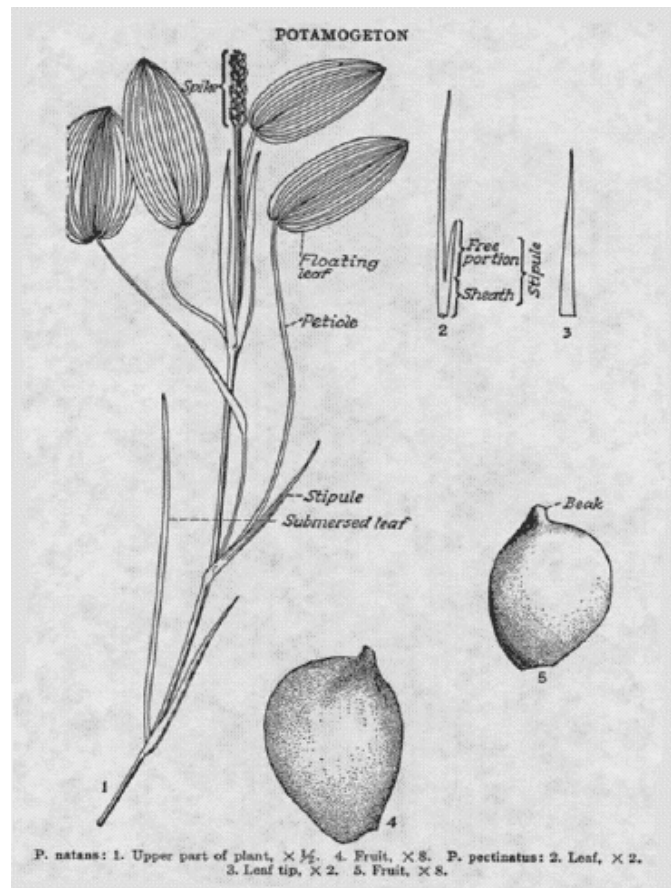


Figure 23: Photo courtesy of Brenton Butterfield

Common Name: **Sago pondweed**

Scientific Name: *Stuckenia pectinata*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

Sago pondweed grows below the water surface at depths greater than 13 feet, although it is most common in 3-7-foot water depths. It grows in a variety of sediment types and a wide range of water conditions. In fact, it is often the last surviving rooted plant in very turbid water. It has a broad alkalinity range and moderate conductivity and pH ranges. Flowers and fruit are produced on a slender stalk that may be submersed or floating on the water surface.

Sago's rapid growth rate allows it to quickly occupy large areas and smother potential competitors. It is also very pollution tolerant and can rapidly colonize unoccupied habitats. This may be one reason why the plant is typically not found with a diversity of other species but tends to occur in discrete beds in stressed environments. Sago pondweed is firmly rooted and has branched, slender stems and grass-like narrow leaves.

This plant provides limited cover for bluegills, perch, northern pike and muskellunge, and is good cover for walleye. It supports insects valuable as food for fish and ducklings and is considered one of the top food producers for waterfowl. Both the fruit and tubers are heavily grazed and are considered critical for a variety of migratory waterfowl. Sago communities also provide escape cover for invertebrates, thus allowing them to thrive in the presence of small fish.

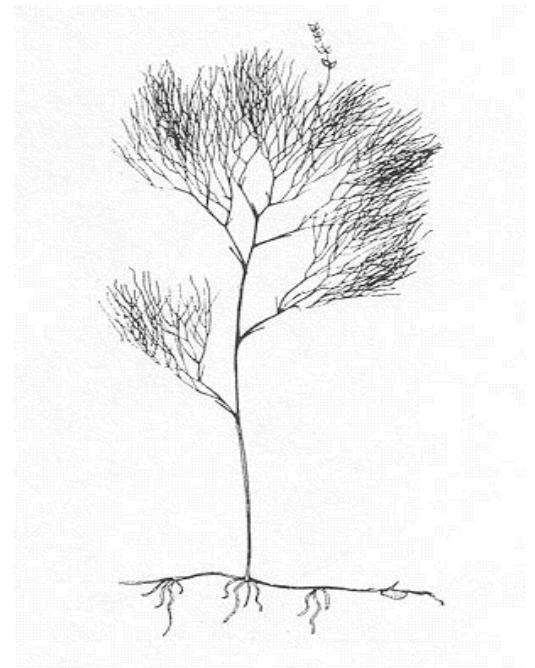


Figure 24: Photo courtesy of Brenton Butterfield

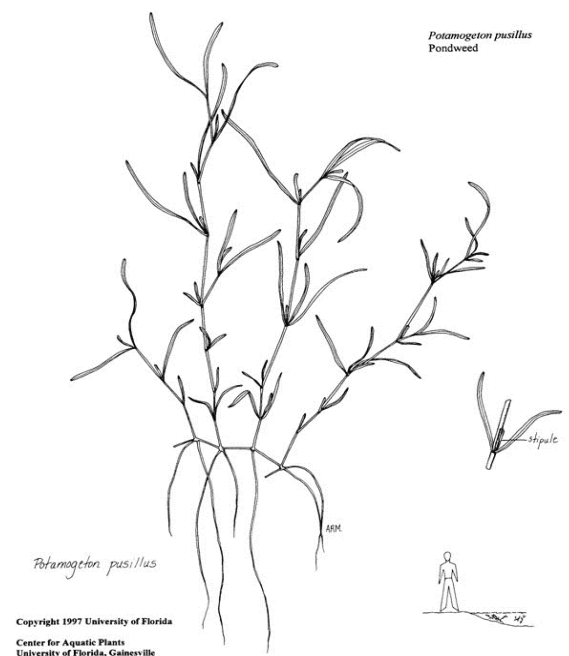
Common Name: **Small pondweed**
Scientific Name: *Potamogeton pusillus*
Plant Type: Submersed
Duration: Perennial
U.S. Nativity: Native

Small pondweed is found over moderate ranges of alkalinity and pH, and a limited conductivity range. It grows in soft substrate to a depth of about 9 feet and is tolerant to turbid water conditions. The plant grows below the surface but may have flowers or seeds extending out of the water. It is firmly rooted to the bottom, and has branched, slender stems and grass-like narrow leaves.

This plant can be a locally important food source for a variety of ducks and geese. It provides some cover for bluegills, perch, northern pike and muskellunge, and good cover for walleyes. It also supports insects valuable as food for fish and ducklings.



Figure 25: Photo courtesy of Brenton Butterfield



Common Name: **Richardson's/clasping-leaf Pondweed**

Scientific Name: *Potamogeton richardsonii*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

This plant shows no turbidity or substrate preference and can withstand environmental disturbance. It is many times the only broad-leaf pondweed found in degraded water. Clasping-leaf pondweed is found over moderate ranges of water chemistries and in water depths to 13 feet. It is often found growing with coontail and small pondweed.

The fruit produced by clasping-leaf pondweed can be a locally important food source for a variety of waterfowl. Muskrat, deer, beaver and moose may also eat the plant. The leaves and stem are colonized by invertebrates and offer foraging opportunities and cover for fish.

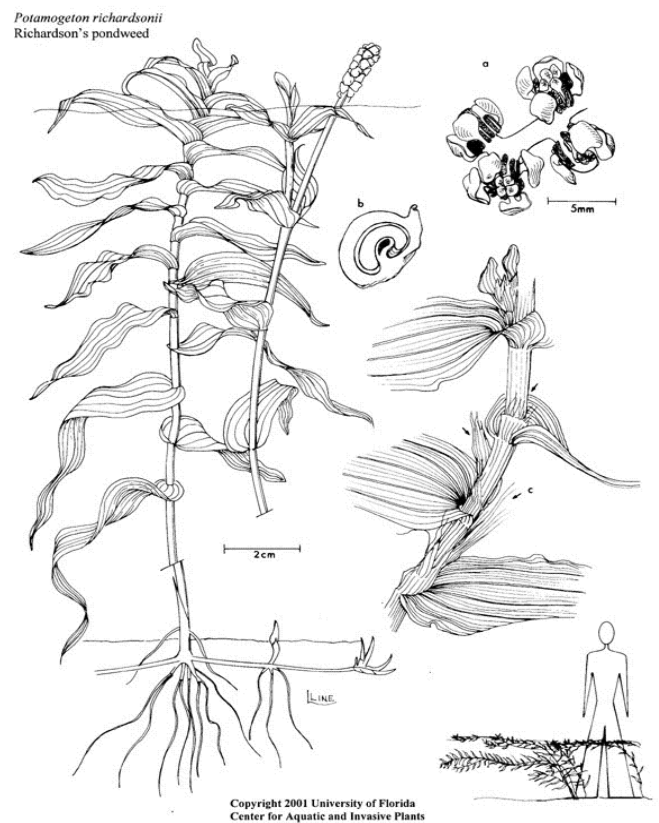


Figure 26: Photo courtesy of Brenton Butterfield

Common Name: **Stiff Pondweed**

Scientific Name: *Potamogeton strictifolius*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

Stiff pondweed is found in water depths up to 10 feet and prefers hard bottoms. It is more frequently found in low alkalinity and conductivity water and tolerates a broad pH range. It has narrow, stiff leaves that can grow up to 6 cm long with 3-5 veins present that are sharply pointed or tipped with a fine bristle. The stipules are white and fibrous, similar to Fries' pondweed, but stiff pondweed may or may not have glands. Its flower stalk can grow to 4 cm long and produces whorls of rounded fruits.

Stiff pondweed is a good source of food for ducks and geese and provides valuable fish habitat.



Figure 27: Photo courtesy of Brenton Butterfield



Stiff pondweed

Common Name: **White water crowfoot**

Scientific Name: *Ranunculus aquatilis*

Plant Type: Submersed

Duration: Perennial

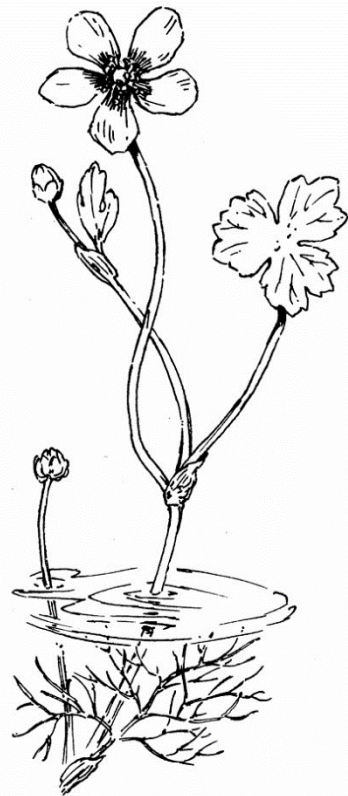
U.S. Nativity: Native

White water crowfoot has long, branched stems that emerge from both trailing runners and buried rhizomes. Their leaves grow to 1-2cm long. They are finely cut into thread-like divisions and either attach directly to the stem or have a very short leaf stalk. Leaves emerge along the stem in an alternate arrangement and are stiff enough to hold their shape when lifted out of the water. white, five-petaled flowers are produced on stalks of varying lengths, just above the water's surface.

White water crowfoot is found in both lakes and streams with higher alkalinity, usually in less than 2 meters of water. as their flowers give way to fruit, the water crowfoot bed comes a choice spot for dabbling ducks. Both fruit and foliage are consumed by a variety of waterfowl. When it is growing in shallow zones, it is sometimes consumed by upland game birds. Stems and leaves of this plant provide valuable invertebrate habitat and it is considered a fair produced of food for trout.



Figure 28: Photo courtesy of gobotany.nativeplanttrust.org



Common Name: **Arum-leaved arrowhead, northern arrowhead**

Scientific Name: *Sagittaria cuneata*

Plant Type: Emergent

Duration: Perennial

U.S. Nativity: Native

This plant grows either emergent or floating, rarely submersed. Its roots are segmented or strongly constricted. Long submergent leaves are 1-5cm wide, with a prominent midvein originating from a spongy base. When their floating leaves are produced, they are arrow-shaped with two short lobes. These lobes can grow 2-5 inches long and about one-half as much across. Flowers are emergent on a stalk, with three flowers per whorl. Each flower has three round, well-separated petals and are about $\frac{3}{4}$ -1 inch across. It is generally found in low conductivity, low alkalinity water, but over a broad and circumneutral pH range. Arum-leaved arrowhead prefers full or partial sun and shallow water that is slow-moving or stagnant. They are usually found in mud or sand and can tolerate occasional dry spells.

Arum-leaved arrowhead protects shorelines from wave erosion. It provides cover for waterfowl and young fish, and spawning areas for northern pike. It produces its flowers and fruits during midsummer; the nectar and pollen of the flowers attract a variety of insects including honeybees and bumblebees. Ducks and geese are known to feed on these wetland plants, eating their seeds and tubers. In addition, muskrats, beaver, and other wildlife feed on the stalk bases, crowns, and tubers. Even some turtles reportedly feed on these plants.



Figure 29: Photo courtesy of www.illinoiswildflowers.info/



Arum-leaved arrowhead

Common Name: **Arrowhead, duck potato**

Scientific Name: *Sagittaria latifolia*

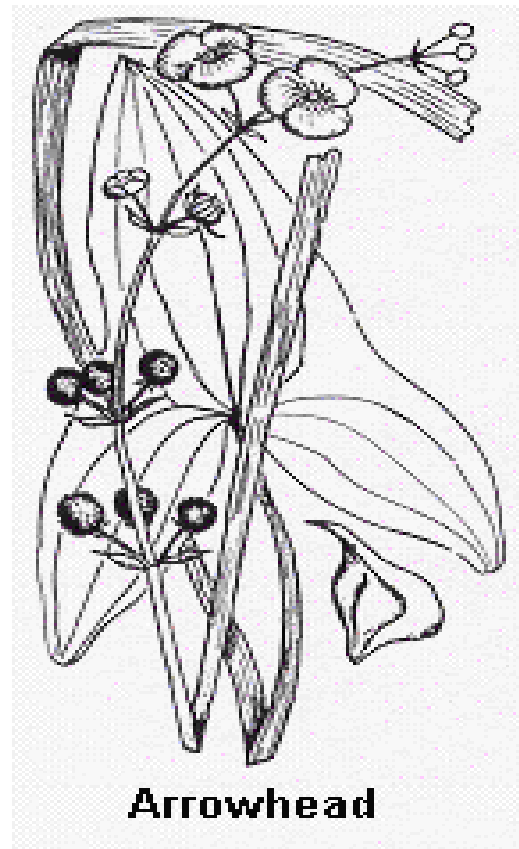
Plant Type: Emergent

Duration: Perennial

U.S. Nativity: Native

This plant grows above the surface in shallow water up to 4 feet deep and shows no substrate or turbidity preference. It is found over broad pH and alkalinity ranges and a moderate conductivity range. Reaching about 3-4 feet tall, the plant has individual leaves that can be more than a foot long. Leaves are usually arrow-shaped with backward-pointing lobes, but vary in shape and may be long, linear, and grass-like. White flowers are about an inch in diameter, with three rounded petals, growing from the thick stem in whorls of three. Arrowhead's horizontal roots have short, thick stems or tubers at their tips in autumn.

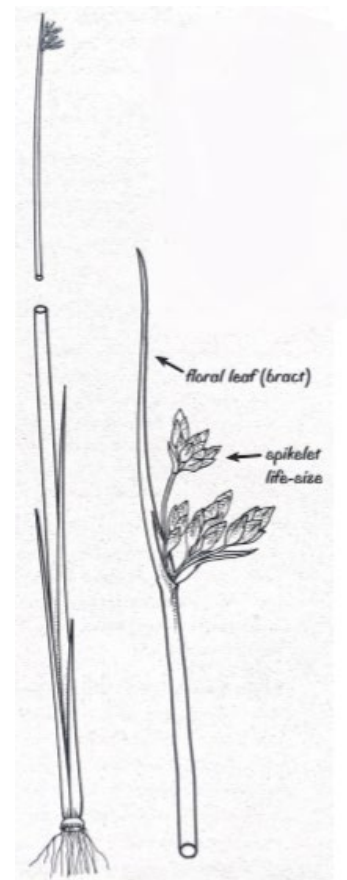
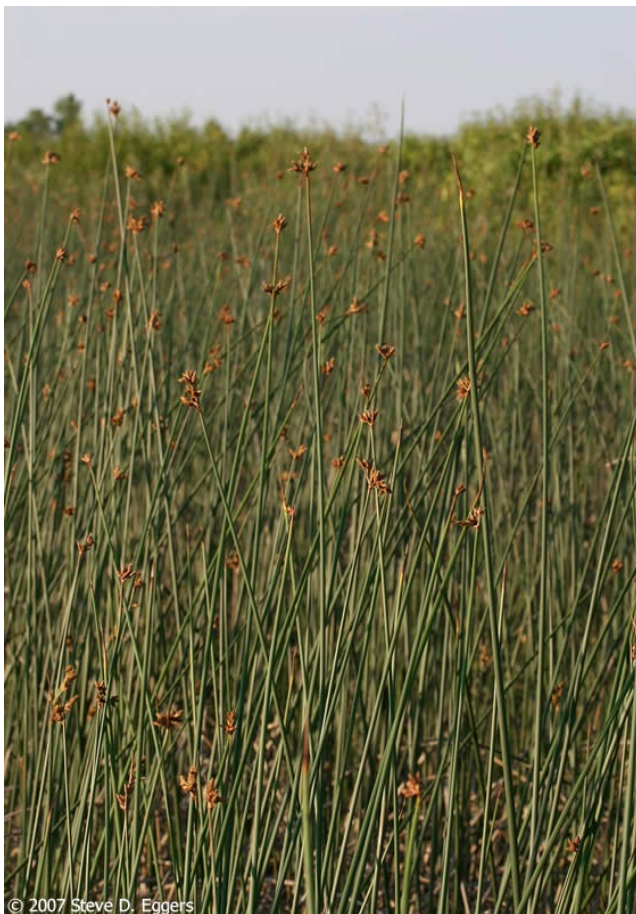
Arrowhead protects shorelines from wave erosion. It is also one of the highest value aquatic plants for wildlife. It provides cover for waterfowl and young fish, and spawning areas for northern pike. Muskrats, beaver, and other wildlife eat the tubers. Geese and ducks eat both seeds and tubers, giving this plant the name "duck potato." Arrowhead is capable of rapidly removing phosphorus from sediments and can store high levels in its leaf tissue.



Common Name: **Hardstem bulrush**
Scientific Name: *Schoenoplectus acutus*
Plant Type: Emergent
Duration: Perennial
U.S. Nativity: Native

Hardstem bulrush is a common species found in Wisconsin. It is found over narrower pH, alkalinity, and conductivity ranges; its median pH, alkalinity, and conductivity are also lower than those of softstem bulrush. Primarily found growing in less than 2 meters deep, hardstem shows a preference for firm substrate with good water movement in the root zone. This plant has tall, sturdy stems, standing up to 10 feet tall, that emerge from a shallow rhizome. The cylindrical, olive-green stems are firm when pressed between your fingers due to many small chambers that fill the stem. Short, inconspicuous leaves sheath the base of each stem.

Hardstem bulrush offers habitat for invertebrates and shelter for young fish, especially northern pike. The nutlets are consumed by a wide variety of waterfowl, marsh birds and upland birds. Stems and rhizomes are eaten by geese, ducks and muskrats. Muskrats and other small mammals rely on hardstem as a staple food. Bulrushes also provide valuable nesting material and cover for waterfowl, marsh birds, and other shallow marsh wildlife.



Hardstem bulrush

Common Name: **Softstem bulrush**

Scientific Name: *Schoenoplectus tabernaemontani*

Plant Type: Emergent

Duration: Perennial

U.S. Nativity: Native

Softstem bulrush is another common species, found statewide. It can be found over a broad range of pH, conductivity, and alkalinity conditions. It's usually found on softer, muckier substrates in water less than 6.5 feet deep. Not commonly found in turbid water, softstem usually prefers stagnant water instead. This plant has tall, flexible stems that emerge from a shallow rhizome and can reach 10 feet tall. The cylindrical, blue-green stems are spongy when pressed between your fingers due to the large air chambers that fill the stem. A floral leaf called a bract is found at the tip of the stem that produces spikelets. The spikelets are scale,-covered flowers that develop nutlets. Short, inconspicuous leaves sheath the base of each stem.

Softstem bulrush offers habitat for invertebrates and shelter for young fish. The nutlets are consumed by a wide variety of waterfowl, marsh birds and upland birds. Stems and rhizomes are eaten by geese and muskrats. Bulrushes also provide nesting material and cover for waterfowl, marsh birds, and muskrats.



Figure 30: Photo courtesy of www.wildflower.org



Softstem bulrush

Common Name: **Water bulrush**

Scientific Name: *Schoenoplectus subterminalis*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

Water bulrush is mostly submersed with only the tips of fertile stems poking above surface. This plant is found over a moderate range of pH, conductivity, and alkalinity conditions. It is found growing in shallow water and on a variety of substrates, including sand, marl, muck, and peat. Slender, limp stems (to more than 3 feet in length) extend from a fine rhizome. The stems float in water along with hair-like leaves that arise near the base. Grass-like meadows of water bulrush provide invertebrate habitat and shelter for fish.



Figure 31: Photo courtesy of Marilee Lovit



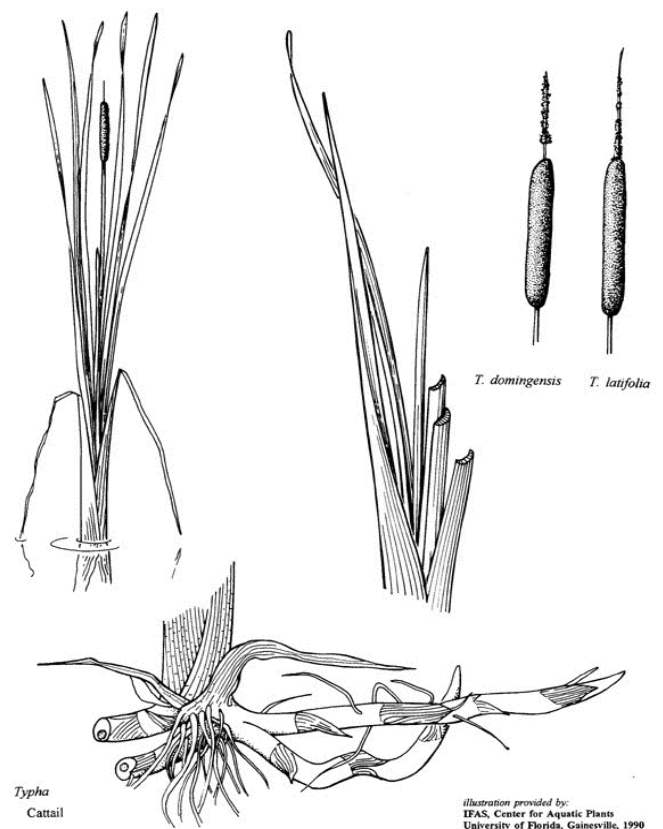
Common Name: **Narrow-leaf & broad-leaf cattail**
Scientific Name: *Typha angustifolia* & *Typha latifolia*
Plant Type: Emergent
Duration: Perennial
U.S. Nativity: Native

These plants grow 3-10 feet tall above the water surface in marshes, along shorelines, and in quiet water up to 2.5-3 feet deep, often in disturbed areas. They are found over broad alkalinity and pH ranges and a moderate conductivity range. Narrow-leaf is more tolerant of chloride and alkalai than broad-leaf cattail.

Cattails help stabilize marshy borders of lakes, protect shorelines from wave erosion, provide spawning sites for northern pike, and provide cover and nesting sites for marsh birds and waterfowl. Muskrat and beaver eat the stalks and roots. Cutting stalks under water during the early summer before the “cattail” appears works best to control growth. Cutting under water just before the lake freezes is also effective.



Figure 32: Photo courtesy of Brenton Butterfield



Common Name: **Common/great bladderwort**

Scientific Name: *Utricularia vulgaris*

Plant Type: Free-floating

Duration: Perennial

U.S. Nativity: Native

Bladderwort is a carnivorous, free-floating plant that prefers soft substrate, tolerates turbid water, and grows in water depths from only a few inches to about 8 feet. It is found over a broad pH range, including some acid water with a pH of less than 5. Its alkalinity range is moderate and conductivity range is limited. This plant is most successful in still water where the bladders that trap prey can function properly, and where the finely divided stems are not torn by wave action.

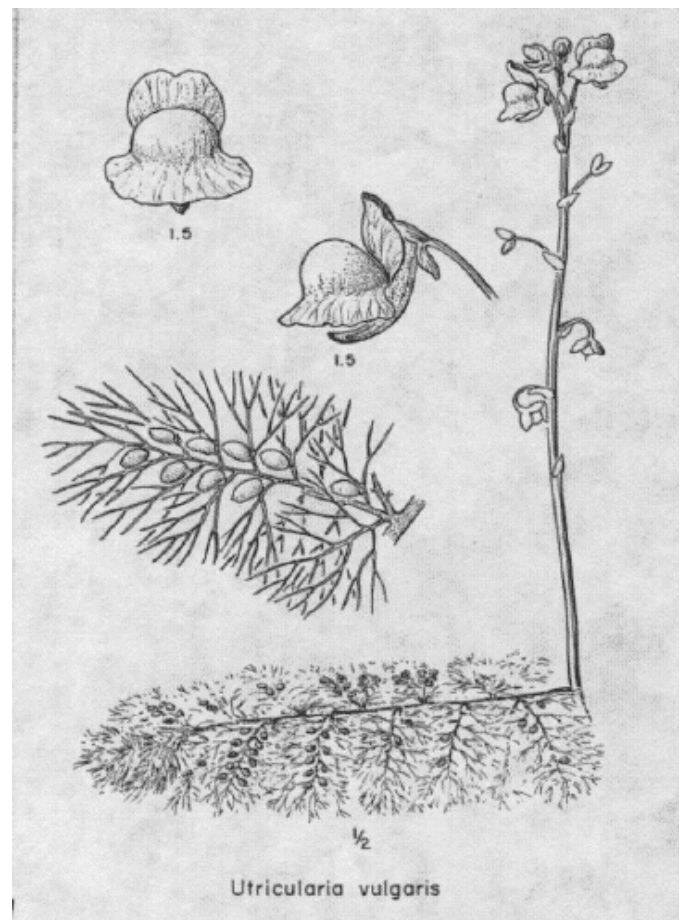
The trailing stems of common bladderwort provide food and cover for fish. Because it is free-floating, the plant can grow in areas with very loosely consolidated sediment. This provides needed fish habitat in areas that are not readily colonized by rooted plants.



Figure 34: Photo courtesy of gobotany.nativeplanttrust.org



Figure 33: Photo courtesy of Brenton Butterfield



Common Name: **Water celery**

Scientific Name: *Vallisneria americana*

Plant Type: Submersed

Duration: Perennial

U.S. Nativity: Native

This species prefers semi-hard substrate, is turbidity tolerant, and grows in water depths up to 10-15 feet. It is found over broad pH and alkalinity ranges and a moderate conductivity range. Flowering occurs in late summer on a coiled stalk. It spreads by rhizomes and tuberous tips that, along with the fruits, are relished by waterfowl. Wild celery often grows in beds near pondweeds such as Slender naiad.

Wild celery is a premier source of food for waterfowl, especially for canvasback ducks in the fall. All portions of the plant are consumed, including foliage, rhizomes, tubers, and fruit. This plant is also important for marsh birds and shore birds, including rail, plover, sandpiper, and snipe. Muskrats are also known to graze on it. Beds of wild celery are considered good fish habitat providing shade, shelter and feeding opportunities. Wild celery is usually best left alone unless excessive growth in shallow water presents a problem.

Vallisneria americana
Tapegrass



2017 © Peter M. Dziuk

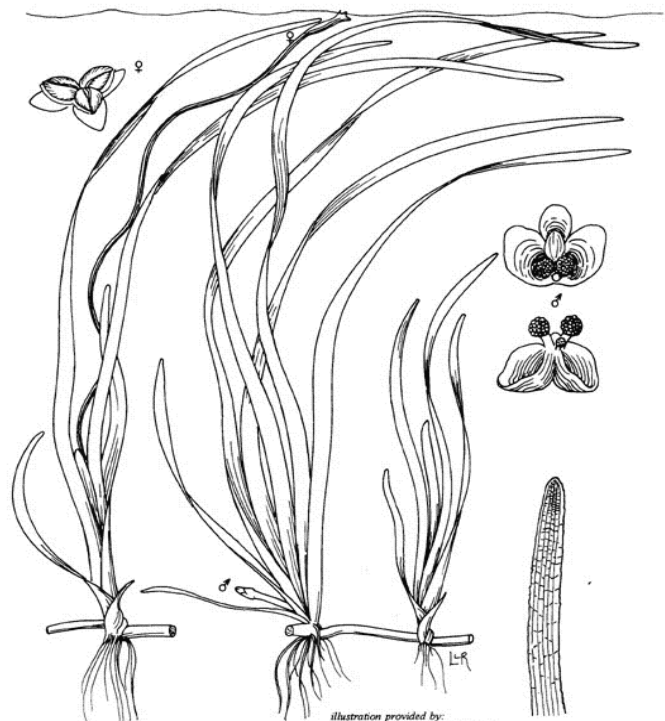


illustration provided by:
IFAS, Center for Aquatic Plants
University of Florida, Gainesville, 1990

Common Name: **Watermeal**

Scientific Name: *Wolffia columbiana*

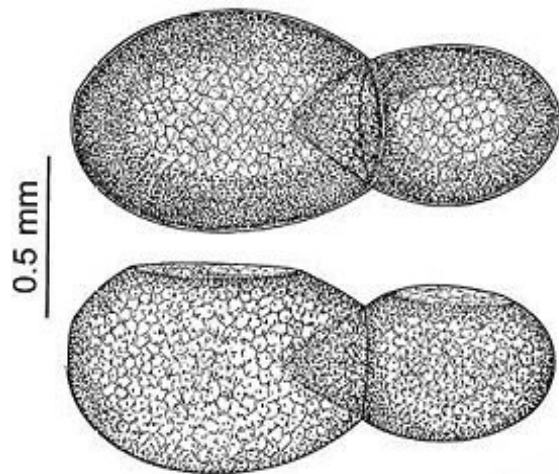
Plant Type: Free-floating

Duration: Perennial

U.S. Nativity: Native

Watermeal is one of the smallest flowering plants in the world; the flowers are only seen with magnification and are seldom found. These plants multiply mostly by budding and when exposed to full sun and nutrient-rich water they can grow rapidly. It is green, globular with a rounded upper surface, and does not have any dots or markings. Watermeal is often found growing with duckweeds but can be easily distinguished by its absence of roots. Reaching up to 4 mm in length, individuals are hardly larger than a pinhead. Since it is a free-floating plant, description of depth distribution, substrate preference, and turbidity tolerance is inappropriate.

Watermeal is good waterfowl food consumed by a wide variety of ducks and geese including mallards. It is also eaten by muskrats and some fish. When large floating rafts form, mosquito larvae can be prevented from reaching the surface for oxygen.



Watermeal

Figure 35: Photo courtesy of Ron Vanderhoff

Common Name: **Horned Pondweed**

Scientific Name: *Zannichellia palustris*

Plant Type: Submersed

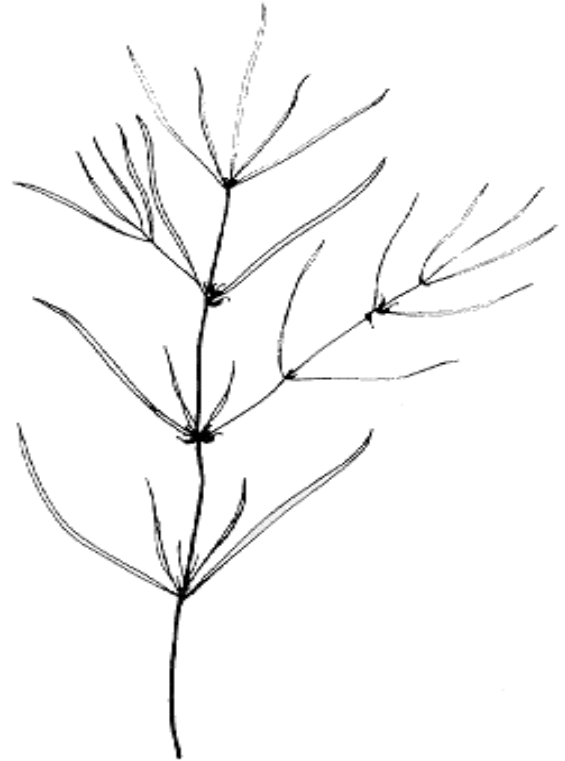
Duration: Annual

U.S. Nativity: Native

Horned pondweed has long, narrow leaves and slender stems that emerge from an equally slight rhizome. This annual species is found in high alkalinity, high pH, and high conductivity water. It is turbidity tolerant and prefers hard substrate. Horned pondweed is commonly found in water less than 12 feet deep and is often partly buried in silt or mud. Waterfowl eat the fruit and foliage of horned pondweed. It is also considered a fair food producer for trout.



Figure 36: Photo courtesy of <http://www.illinoiswildflowers.info>



Several varieties of algae are found in Lake Ripley, including green, bluegreen and filamentous algae. Brief descriptions are provided below.

Filamentous algae (*Cladophora*, *Spirogyra*): This type of macroalgae consists of single cells that are connected end-to-end. It appears as green-colored thin threads, branched filaments or an interwoven net. Filamentous algae do not have roots, stems or leaves. It begins growing along the shoreline or on the lake bottom, and later buoys to the surface forming green mats that frequently attach to rocks or other plants. Abundant growth identifies lakes polluted with excessive nutrients. Although filamentous algae provide cover for insects valuable as fish food, it is often viewed as an unsightly nuisance. Preventative actions that reduce the flow of nutrients into the lake are the best means of control.

Planktonic algae: These are microscopic, single-celled organisms that may form multicellular colonies or filaments. Common varieties include green algae, bluegreen algae and diatoms. Abundant growth results in “blooms” that color the water green or brown. Surface scums of bluegreen algae may form on the water surface during the summer. Abundant growth identifies lakes polluted with excessive nutrients such as nitrogen and phosphorus. Planktonic algae provide food for zooplankton and some food for fish fry. Preventative actions to reduce the flow of nutrients into the lake are the best means of control.